PE1000N

Arm System, NVIDIA Jetson, LPDDR4, eMMC, USB3, Dual LAN, HDMI, M.2 E, M.2 M, mini PCIe, AEM, Dual SIM, 12-24V

Features

- Intelligent Edge AI System with NVIDIA Jetson™ Nano™, TX2 NX and Xavier™ NX
- Fanless design and diverse I/O in a compact size
- Ready to connect Wi-Fi, BT & LTE by optional modules
- Wide range of power input and operating temperature
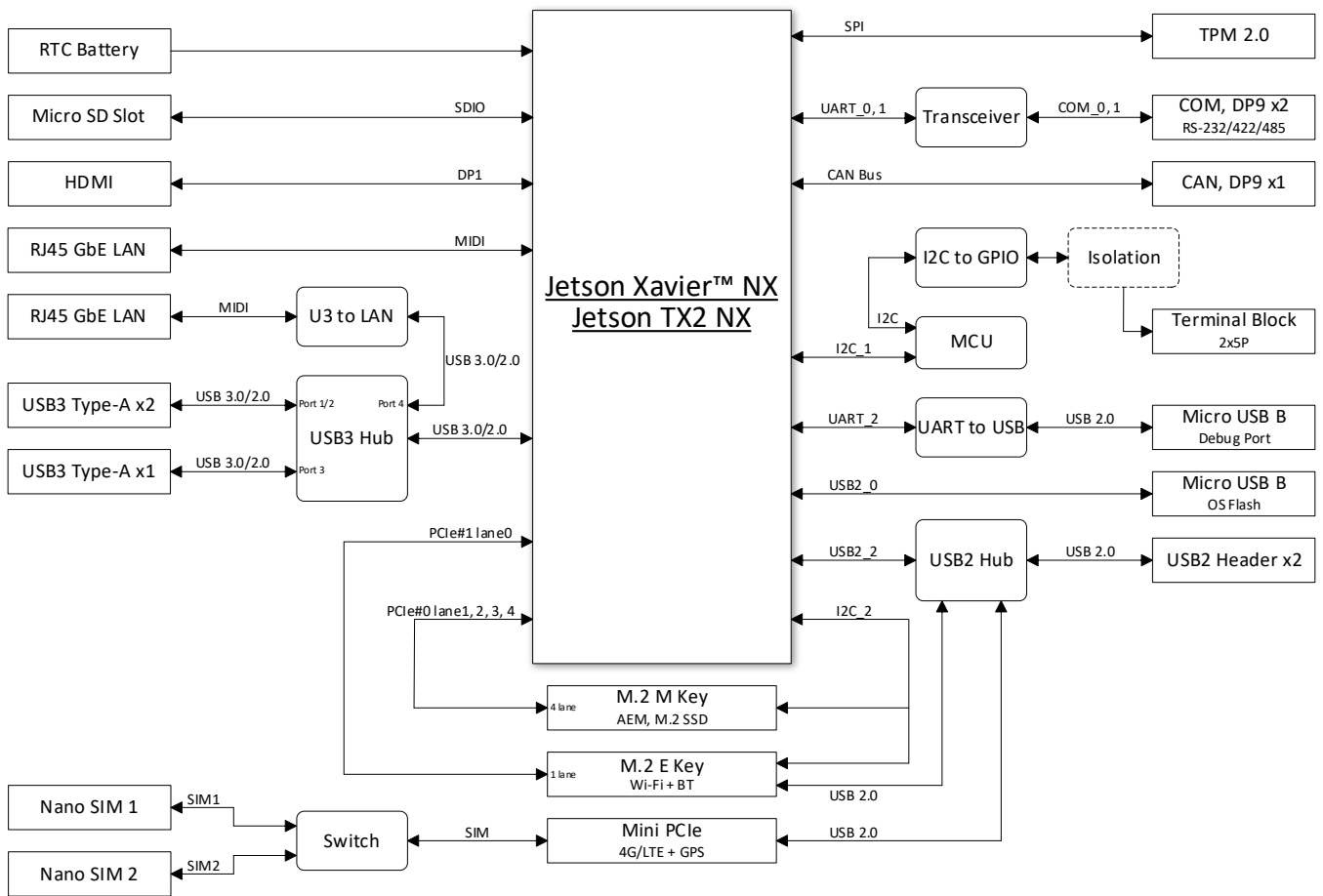- Support ASUS Expansion Module (AEM)

Specifications

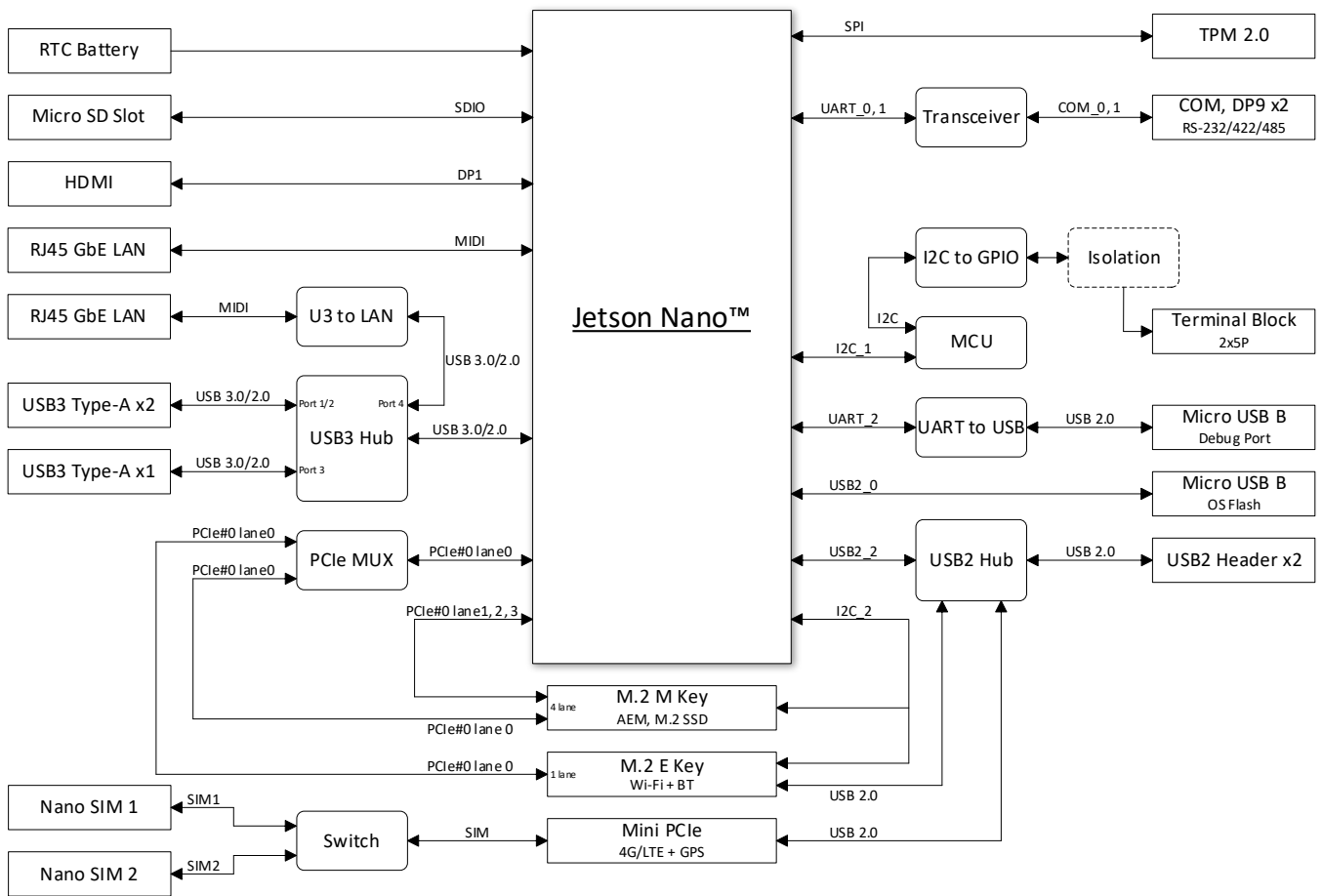| Processor System	SOM	NVIDIA Jetson Nano™	NVIDIA Jetson TX2 NX	NVIDIA Jetson Xavier™ NX
	CPU	4 x Arm® Cortex®-A57	2 x NVIDIA Denver 2 64-Bit 4 x Arm® Cortex®-A57	6 x NVIDIA Carmel Arm®v8.2 64-bit
	GPU	128-core NVIDIA Maxwell™	256-core NVIDIA Pascal™ GPU	384-core NVIDIA Volta™ with 48 Tensor Cores
	Memory	4 GB 64-bit LPDDR4	4 GB 128-bit LPDDR4	8 or 16 GB 128-bit LPDDR4x
	eMMC	16 GB	16 GB	16 GB
Wired Interface	Ethernet	2 x 10/100/1000 Mbps, RJ45		
	USB (or Header)	3 x USB 3.2 Gen1, Type-A 1 x USB 2.0, Micro-USB for OS Flash 2 x USB 2.0, Pin Header (Internal)		
	COM	2 x RS-232/422/485, DB9	2 x RS-232/422/485, DB9 1 x CAN bus, DB9	
	DIO	4 x DI, 4 x DO (2x5 Terminal Block, w/ isolation)		
	Display	1 x HDMI 2.0b, 3840 x 2160 @60Hz		
	Debug Port[1]	1 x Debug console via Micro-USB		
Wireless Interface	Wi-Fi	Optional		
	Bluetooth	Optional		
	Cellular	Optional		
	GPS	Optional		
Expansion	M.2 M key[2]	1 x 2242/2260/2280, for AEM, M.2 SSD (PCIe, I2C and SMBus)		
	M.2 E key[2]	1 x 2230, for Wi-Fi/BT (PCIe, USB 2.0, I2C and PCM)		
	Mini PCIe	1 x Full-Length socket, for 4G/LTE (USB 2.0)		
Slot	SIM	2 x nano-SIM slots		
	Micro SD	1 x Micro SD slot		
Power	Power Input	12 to 24 VDC, 3-pin terminal block (1-pin for remote power button)		
Mechanical	Mounting	Wall-mount (support assembly with DIN rail clips)		
	Dimensions	Board: 3.5", 146 x 105 mm System: 152 x 114 x 62 mm		
	Weight	1.4 KG		
Environment	Operating Temp.	-20 ~ 60°C w/ all modules operating		
	Storage Temp.	-40 ~ 85°C		
	Relative Humidity	10 ~ 95% (non-condensing)		
Security	TPM	on-board TPM v2.0		
Others	Watch Dog Timer	Yes. HW WDT		
	Operating System[1]	Ubuntu Desktop		

[1] On selected models
[2] For Jetson Nano™, the M key slot shares same PCIe bus with E key slot. Default occupied for WLAN module on E key slot.

Block Diagram

RTC Battery	
Micro SD Slot	SDIO
HDMI	DP1
RJ45 GbE LAN	MIDI
RJ45 GbE LAN	MIDI → U3 to LAN
USB3 Type-A x2	USB 3.0/2.0 → USB3 Hub (Port 1/2)
USB3 Type-A x1	USB 3.0/2.0 → USB3 Hub (Port 3)

Jetson Xavier™ NX
Jetson TX2 NX

- SPI → TPM 2.0
- UART_0, 1 → Transceiver → COM_0, 1 → COM, DP9 x2 (RS-232/422/485)
- CAN Bus → CAN, DP9 x1
- I2C to GPIO ↔ Isolation
- I2C_1 → MCU
- I2C → Terminal Block 2x5P
- UART_2 → UART to USB → USB 2.0 → Micro USB B (Debug Port)
- USB2_0 → Micro USB B (OS Flash)
- USB2_2 → USB2 Hub → USB 2.0 → USB2 Header x2
- I2C_2

USB3 Hub — Port 4 — USB 3.0/2.0
USB 3.0/2.0

PCIe#1 lane0
PCIe#0 lane1, 2, 3, 4

M.2 M Key (AEM, M.2 SSD) — 4 lane
M.2 E Key (Wi-Fi + BT) — 1 lane — USB 2.0

Nano SIM 1 — SIM1 → Switch
Nano SIM 2 — SIM2 → Switch
Switch — SIM → Mini PCIe (4G/LTE + GPS) — USB 2.0

Block Diagram

RTC Battery	
Micro SD Slot	SDIO
HDMI	DP1
RJ45 GbE LAN	MIDI
RJ45 GbE LAN	MIDI → U3 to LAN
USB3 Type-A x2	USB 3.0/2.0 → Port 1/2
USB3 Type-A x1	USB 3.0/2.0 → Port 3

Jetson Nano™

USB3 Hub — Port 4 — USB 3.0/2.0
USB 3.0/2.0

PCIe MUX — PCIe#0 lane0
PCIe#0 lane0
PCIe#0 lane0
PCIe#0 lane1, 2, 3

M.2 M Key
AEM, M.2 SSD
4 lane
PCIe#0 lane 0

M.2 E Key
Wi-Fi + BT
1 lane
PCIe#0 lane 0

Nano SIM 1 — SIM1
Nano SIM 2 — SIM2
Switch — SIM — Mini PCIe
4G/LTE + GPS

SPI → TPM 2.0

UART_0, 1 → Transceiver — COM_0, 1 → COM, DP9 x2
RS-232/422/485

I2C to GPIO ↔ Isolation
I2C
I2C_1 → MCU → Terminal Block
2x5P

UART_2 → UART to USB — USB 2.0 → Micro USB B
Debug Port

USB2_0 → Micro USB B
OS Flash

USB2_2 → USB2 Hub — USB 2.0 → USB2 Header x2

I2C_2

USB 2.0
USB 2.0

Ordering Information

PN	SoM	DRAM	EMMC	Wi-Fi/BT* (M.2 E-Key)	SSD* (M.2 M-Key)	4G/LTE* (mPCIe)	O.P. Temperature	PSU	OS*
90AE00K1-M*	Jetson Nano	4 GB	16 GB	option	option	option	-20~60	option	option
90AE00K1-M*	Jetson TX2 NX	4 GB	16 GB	option	option	option	-20~60	option	option
90AE00K1-M*	Jetson Xavier NX	8 GB	16 GB	option	option	option	-20~60	option	option
90AE00K1-M*	Jetson Xavier NX	16 GB	16 GB	option	option	option	-20~60	option	option

* Optional and part number might vary for different regulations and package. Please consult the local sales representative for the exact 90PN.

Packing List

Description	Qty
Adapter cable DC to terminal block 3 pin	1
Wall mount bracket set	1
DIO terminal block	1
Dust cover set	1

Optional Accessories: (purchased separately)

Item#	Description
WI-FI/BT Module	
0C011-00214100	EMWICON WMX6219, RTL8822CE, Wi-Fi 5 802.11ac + BT 5.0 (2*2), M.2 2230
LTE Module	
0C031-00091400	Quectel EG25-G, LTE Cat 4, mini-PCIe module
WI-FI/BT ANTENNA	
14008-02990100	Omni-directional rubber duck Wi-Fi antenna, 2.4/5GHz, 2dBi
4G LTE ANTENNA	
14008-03440000	Omni-directional rubber duck GPRS/EDGE/UMTS/HSPA/LTE antenna, 704 to 960MHz & 1710 to 2690MHz, 3.5 dBi
GPS ANTENNA	
14008-04370000	Active type adhesive GPS antenna with extension cable, 1582MHz, 26dBi, extension cable length 3m
SSD	
03B03-00235300	SSD P3X4 128GB M2 2280 NVME
03B03-00229600	SSD P3X4 256GB M2 2280 NVME
03B03-00375400	SSD P3X4 512GB M2 2280 NVME

* The part number might vary due to part number revision.

Intelligent Edge Computer
Data Sheet

ASUS IoT

Optional Accessories: (purchased separately)

Item#	Description
ADAPTER	
0A001-01050900	65W Power adapter, input 100 - 240Vac, output 12Vdc / 5.41A, C14, 0 to 40°C O.P. temperature
0A001-00891600	65W Power adapter, input 100 - 240Vac, output 19Vdc / 3.42A, C6, 0 to 35°C O.P. temperature
POWER CORD	
14009-00021400	C14 Power cord with United States (US) plug, 180cm
14009-00021000	C14 Power cord with Europe (EU) plug, 180cm
14009-00021100	C14 Power cord with China (CN) plug, 180cm
14009-00020600	C14 Power cord with Japan (JP) plug, 180cm
14009-00020800	C14 Power cord with Australia (AU) plug, 180cm
14009-00020900	C14 Power cord with United Kingdom (UK) plug, 180cm
14009-00021000	C14 Power cord with Korea (KR) plug, 180cm
14009-00020700	C14 Power cord with Swiss (CH) plug, 180cm
14009-00021200	C14 Power cord with Taiwan (TW) plug, 180cm
14G1100083A0	C6 Power cord with United States (US) plug, 150cm
14G110060341	C6 Power cord with Europe (EU) plug, 80cm
14G110008300	C6 Power cord with China (CN) plug, 80cm
14G110008330	C6 Power cord with Japan (JP) plug, 80cm
14G110060365	C6 Power cord with Australia (AU) plug, 80cm
14G110008350	C6 Power cord with United Kingdom (UK) plug, 80cm
14G110008310	C6 Power cord with Korea (KR) plug, 80cm
14G1100083E0	C6 Power cord with Swiss (CH) plug, 80cm
14G11006032B	C6 Power cord with Taiwan (TW) plug, 80cm

* The part number might vary due to part number revision.